Wafers to use:

The wafers for process calibration are ordered from a wafer supplier that sells high grade, quality wafers. These are 4-inch Si wafers, with low particle count (Particles: <=10 @ >=0.3 microns). Wafers should be handled carefully, because every loading and unloading will add some particulates.

Regular Prime grade wafers also work well, but note that initial pre-process particle measurement may be higher - this is ok as long as you measure *before* the process step, and subtract that value from the *after* process value. If your *before* measurement shows high (eg. >200 particles), do not use that wafer for particle checks, discard it and find a better wafer.

Surfscan 6200 (located in bay5) is used for scanning wafers. There are two standard recipes that could be used for scanning wafers: UCSBTEST1 (for scanning 8" wafers) and UCSBTEST2 (for scanning 4"wafers). The recipe UCSBTEST2 is used as a template to create other two standard recipes: "UCSB GAIN4 0.16-1.6" (measuring small particles 0.16-1.6um) and "UCSB GAIN2 1.6-28.0" (measuring larger particles 1.6-28um).

We have cassettes for 4", 6" and 8" wafers. If you plan to scan wafers that have different size, you need to provide your own cassette and calibrate it. If you need to scan wafer pieces, you need to develop your own procedure for how to scan it (most likely you need to mount the wafer piece on 4' carrier wafer). If you use 6" or 8" cassette please put it back in the cassette box.

The standard **(DEFAULT)** carrier for right indexer should always be 4" carrier.
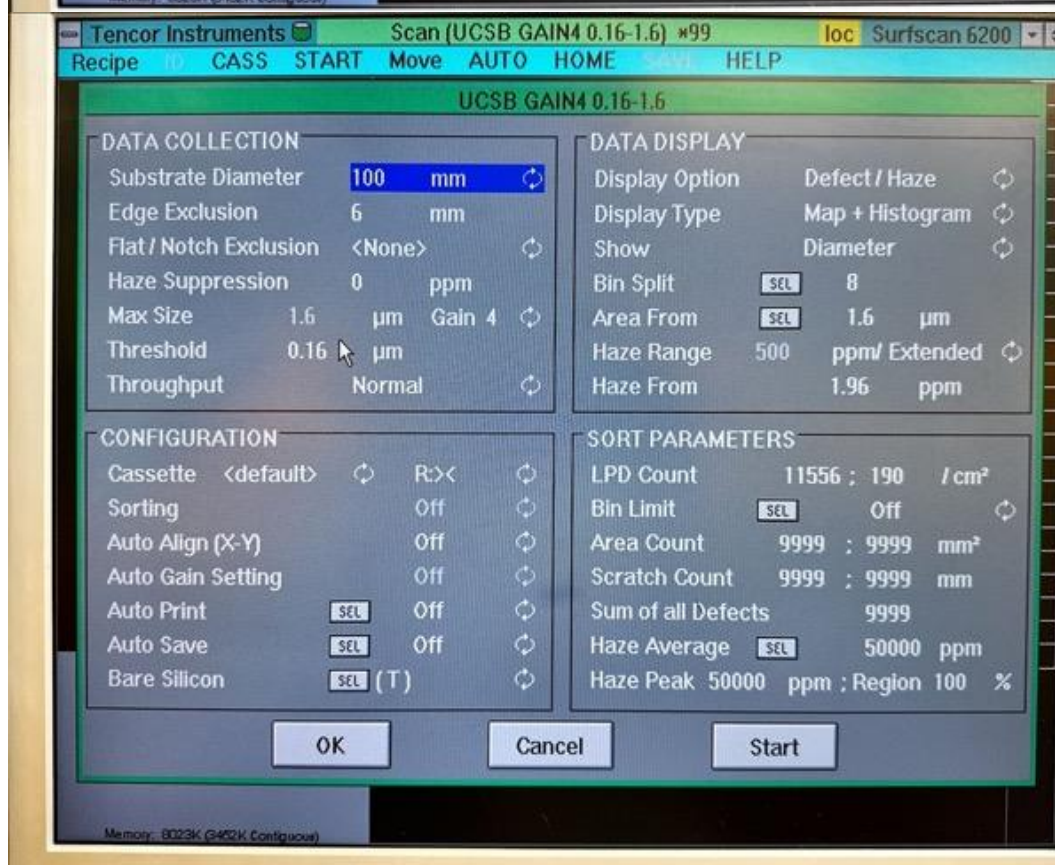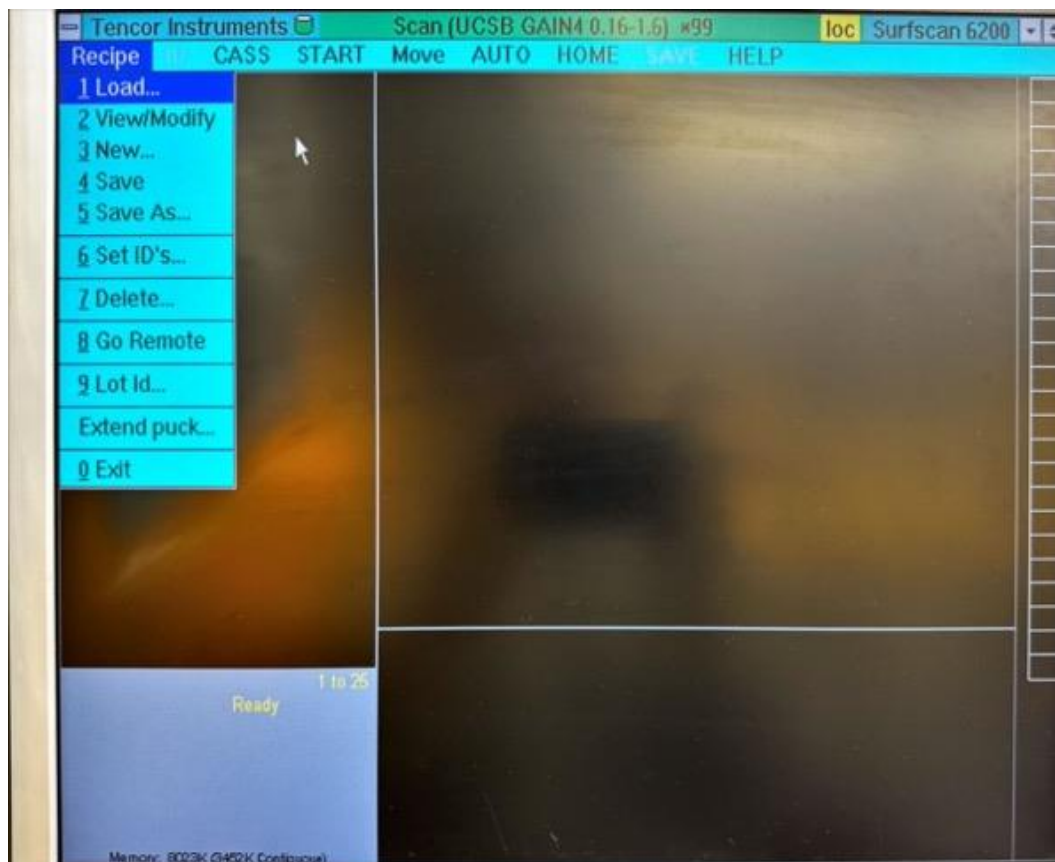
Scanning procedure for 4" Si wafers:

The **right-cassette/indexer** is calibrated for 4-inch, 5-inch and 6inch wafers. The **left-cassette/indexer** is available for 8-inch wafers (not calibrated).

Scan before process step:

1. Log in (access code is boss)
2. Load wafers (face up) to the cassette that says " 4inch Surfscan"
3. Place the cassette with wafers to the right indexer (please check the photo bellow)
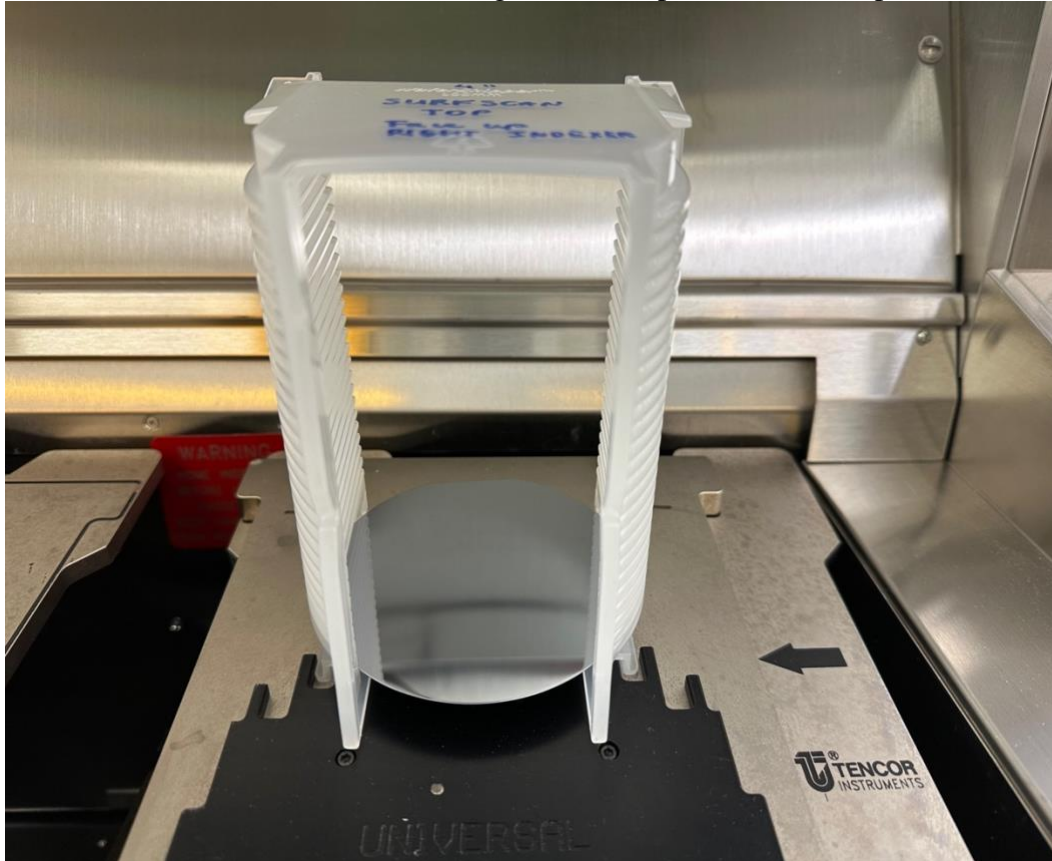
4. In the menu option select "CASS" (this will read all wafers that are loaded into the cassette)
5. Go to "Recipes"
6. Select one of the recipes:
   o UCSB GAIN4 0.16-1.6 (measuring small particles 0.16-1.6um)
   o UCSB GAIN2 1.6-28.0 (measuring larger particles 1.6-28um)
     ▪ Recipe "UCSBTEST2" is used as a template to create recipes UCSB Gain2 and UCSB Gain4

7. View the recipe and modify it if needed
8. If the recipe is modified, select bin split/default to save changes

Recipe   CASS   START   Move   AUTO   HOME   SAVE   HELP

1 Load...
2 View/Modify
3 New...
4 Save
5 Save As...

6 Set ID's...

7 Delete...

8 Go Remote

9 Lot Id...

Extend puck...

0 Exit

1 to 25

Ready

Memory: 8023K (3452K Contiguous)

UCSB GAIN4 0.16-1.6

DATA COLLECTION

Substrate Diameter	100	mm	↻
Edge Exclusion	6	mm	
Flat / Notch Exclusion	<None>		↻
Haze Suppression	0	ppm	
Max Size	1.6	µm	Gain 4 ↻
Threshold	0.16	µm	
Throughput	Normal		↻

DATA DISPLAY

Display Option	Defect / Haze	↻
Display Type	Map + Histogram	↻
Show	Diameter	↻
Bin Split	SEL 8	
Area From	SEL 1.6 µm	
Haze Range	500	ppm/ Extended ↻
Haze From	1.96	ppm

CONFIGURATION

Cassette	<default> ↻	R:><	↻
Sorting		Off	↻
Auto Align (X-Y)		Off	↻
Auto Gain Setting		Off	↻
Auto Print	SEL	Off	↻
Auto Save	SEL	Off	↻
Bare Silicon	SEL	(T)	↻

SORT PARAMETERS

LPD Count	11556 : 190	/ cm²	
Bin Limit	SEL	Off	↻
Area Count	9999 : 9999	mm²	
Scratch Count	9999 : 9999	mm	
Sum of all Defects	9999		
Haze Average	SEL 50000	ppm	
Haze Peak 50000	ppm ; Region 100	%	

OK   Cancel   Start

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9. Select the wafer in the catalog box you want to scan, and press START (it would scan only **ONE** wafer)
10. Select **AUTO** option If you want to scan all wafers in the catalog box, followed by START
11. Wait until scan is finished
12. Record:
    o **LPD Cnt** (sum of all particles #1- #8), particles #1(0.160-0.213) um, particles #8(1.20-1.60) um
    o **Haze** (region (%), average(ppm), peak(ppm))
13. Take a picture of the scan (by phone)
14. Select "Home" so indexer moves up to loading/unloading position
15. Unload wafers
16. Log out

Data Recording:

- Run the above process TWICE: once for recipe "Gain 2" (sizes 1.6µm to 28µm) and another for recipe "Gain 4" (sizes 0.160µm to 1.6µm)
- Record the following:
    - "total particle count",
    - "Haze %" and
    - <u>Take photos of the results screen</u> showing all binning and wafer particle distribution. See example photos below